WHAT IS CLAIMED IS:

1. A hinge device having a driving motor and a reduction module for reducing revolutions per minute of the driving motor, comprising:

a driving shaft for receiving a rotating force of the driving motor transmitted through the reduction module;

a driving cam capable of linearly reciprocating on a part of the driving shaft in a longitudinal direction thereof while being coupled to the driving shaft to rotate according to rotation of the driving shaft, the driving cam being formed at one end thereof with a plurality of radially extending teeth spaced apart from each other at equal angles; and

a driven cam installed to receive elastic force so as to tightly engage with the driving cam in a state in which it faces the driving cam, the driven cam being formed at one end thereof with a plurality of teeth spaced apart from each other at equal angles to be engaged with the teeth of the driving cam, thereby simultaneously rotating according to rotation of the driving cam,

wherein, if the driven cam rotates by external force, the teeth of the driving cam are disengaged from the teeth of the driven cam, thereby preventing a driving force of the driven cam from being transmitted to the driving cam.

2. The hinge device as set forth in claim 1, further comprising:

a coil spring supported at one end thereof by one end of the driving shaft, thereby providing the elastic force in a direction for causing the teeth of the driving cam to engage with the teeth of the driven cam.

3. The hinge device as set forth in claim 1, wherein the reduction module comprises a plurality of gear arrays, which reduce the revolutions per minute of the driving motor, and at the same time, increase a driving force of the driving motor, thereby transmitting the reduced revolutions per minute and increased driving force to the driving shaft.

4. The hinge device as set forth in claim 1, wherein the reduction module comprises:

a housing having a guide gear formed at an inner peripheral surface thereof with a plurality of longitudinally extending teeth spaced apart from each other at equal angles;

a first driving gear installed inside the housing to rotate by the rotating force of the driving motor;

a driving plate provided at one surface thereof with three outwardly extending driving pins spaced apart from each other at equal angles and at the other surface thereof with an outwardly protruding second driving gear; and

driven gears rotatably coupled to the driving pins of the driving plate, respectively, the driven gears being engaged with the guide gear of the housing and the first driving gear.

5. The hinge device as set forth in claim 4, wherein the reduction module further comprises:

second driven gears to be engaged with the guide gear of the housing and the second driving gear; and

a second driving plate provided at one surface thereof with three outwardly extending driving pins spaced apart from each other at equal angles, to which the second driven gears are rotatably coupled, respectively, and at the other surface thereof with an outwardly extending third driving gear.

6. The hinge device as set forth in claim 4, wherein the reduction module further comprises:

a second driving plate provided at one surface thereof with three outwardly extending driving pins spaced apart from each other at equal angles and coupled at the other surface thereof to an end of the driving shaft; and

second driven gears rotatably coupled to the driving pins of the second driving plate, respectively, the driven gears being engaged with the guide gear of the housing and the second driving gear.

7. The hinge device as set forth in claim 1, further comprising:

a housing coupled to an end of the driving motor at one end thereof, the housing being divided into a first module housing and a second module housing by a certain partition formed with a perforated hole, the first module housing being formed at an inner peripheral surface thereof with a guide gear having a plurality of longitudinally extending teeth spaced apart from each other at equal angles,

wherein:

the reduction module comprises a plurality of gear arrays located inside the first module housing, the reduction module reducing the revolutions per minute of the driving motor, and at the same time, increasing a driving force of the driving motor; and

the driving shaft is protruded at one end region thereof into the first module

housing while being received in the second module housing, thereby receiving the rotating force of the driving motor via the reduction module.

8. The hinge device as set forth in claim 7, further comprising:

a coil spring supported at one end thereof by the partition and at the other end thereof by the driving cam, thereby providing the elastic force in a direction for causing the teeth of the driving cam to engage with the teeth of the driven cam.

9. The hinge device as set forth in claim 7, wherein the second module housing receives the driving shaft, driving cam and driven cam in order, and

the second module housing is coupled to a housing cap at one end thereof, the housing cap having a perforated opening, through which one end of the driven cam is protruded.

10. A hinge device of an information terminal comprising a main body, a sub-body to be opened away from or closed to the main body while rotating about a hinge axis extending in one direction of the main body, and the hinge device for rotatably coupling the main body to the sub body, the hinge device comprising:

a driving part generating a driving force for rotating the sub body; and

a clutch part for rotating the sub-body by the driving force of the driving part, whereby, when the sub-body rotates by external force, the clutch part preventing rotating force of the sub-body from being transmitted to the driving part.

11. The hinge device of the information terminal as set forth in claim 10, wherein the driving part comprises:

a driving motor; and

a reduction module including a plurality of gear arrays for reducing revolutions per minute of the driving motor and increasing the driving force of the driving motor, thereby transmitting the reduced revolutions per minute and increased driving force.

12. The hinge device of the information terminal as set forth in claim 11, wherein the reduction module further includes a first module housing coupled to one end of the driving motor at one end thereof, the first module housing being formed at an inner peripheral surface thereof with a guide gear having a plurality of longitudinally extending teeth spaced apart from each other at equal angles.

13. The hinge device of the information terminal as set forth in claim 10, wherein the clutch part comprises:

a driving shaft formed with a flat section having a "D"-shaped cross section over a certain length, the driving shaft rotating by the driving force of the driving part;

a driving cam coupled to the driving shaft to linearly reciprocate within a range of the flat section of "D"-shaped cross section while rotating along with the driving shaft, the driving cam being formed at one end thereof with a plurality of radially extending teeth spaced apart from each other at equal angles; and

a driven cam formed at a peripheral edge of one surface thereof facing the driving cam with a plurality of teeth spaced apart from each other at equal angles to be engaged with the teeth of the driving cam, thereby rotating along with the driving cam according to the rotation of the driving cam,

wherein, when the driven cam rotates by the external force, the driving cam moves on the driving shaft in a lengthwise direction thereof, thereby causing the teeth of the driving cam to be separated from the teeth of the driven cam.

14. The hinge device of the information terminal as set forth in claim 13, further comprising:

a coil spring for providing elastic force to the driving cam in a direction for causing the teeth of the driving cam to tightly engage with the teeth of the driven cam.

15. The hinge device of the information terminal as set forth in claim 13, wherein:

the driving part further comprises a second module housing, in which the driving shaft, driving cam and driven cam are received in order;

the second module housing is received in the sub-body of the information terminal; and

the driven cam is protruded outwardly from the second module housing at the other end thereof, thereby being fixed to the main body of the information terminal.

16. The hinge device of the information terminal as set forth in claim 10, wherein:

the driving part comprises a driving motor, and a reduction module having a plurality of gear arrays arranged within a longitudinally extending first module housing to transmit the driving force of the driving motor;

the clutch part comprises a second module housing integrally extending from one end of the first module housing, a driving shaft rotating by receiving the driving force of the driving motor, a driving cam coupled to the driving shaft to linearly reciprocate

thereon, and a driven cam rotating along with the driving cam according to rotation of the driving cam; and

when the driven cam rotates by external force, the driving cam linearly reciprocates to prevent rotating force of the driven cam generated by the external force from being transmitted to the driving motor.

17. An information terminal comprising:

a main body formed at a front surface thereof with a display device;

a sub-body coupled to one side of the main body to rotate relative to the main body, thereby exposing and covering the display device;

a support rotatably coupled to a rear surface of the main body, the support operating to be spread by a certain angle for supporting the main body in a state in which the main body is inclined by a certain angle from a certain surface on which the terminal is disposed; and

a one step hinge device having a driving part generating a driving force for rotating the sub-body and a clutch part for rotating the sub-body by the driving force of the driving part,

wherein, when the sub-body rotates, the one step hinge device prevents rotating force of the sub-body from being transmitted to the driving part.

18. The information terminal as set forth in claim 17, wherein the clutch part comprises:

a driving shaft formed with a flat section having a "D"-shaped cross section over a certain length, the driving shaft rotating by the driving force of the driving part;

a driving cam coupled to the driving shaft to linearly reciprocate within a range of the flat section of "D"-shaped cross section while rotating along with the driving shaft, the driving cam being formed at one end thereof with a plurality of radially extending teeth spaced apart from each other at equal angles; and

a driven cam formed at one end thereof with a plurality of teeth spaced apart from each other at equal angles to be engaged with the teeth of the driving cam, thereby rotating along with the driving cam according to rotation of the driving cam, and

wherein, when the driven cam rotates by external force, the driving cam moves on the driving shaft in a lengthwise direction thereof, thereby causing the teeth of the driving cam to be separated from the teeth of the driven cam.

19. The information terminal as set forth in claim 17, wherein in a state in which

the sub-body is folded to come into close contact with the main body, the display device is partially exposed above one end of the sub body.

20. The information terminal as set forth in claim 17, wherein the sub-body is installed with first and second keypads at both surfaces thereof, respectively, each keypad having a plurality of key buttons.

21. The information terminal as set forth in claim 17, further comprising:
a camera module installed at the other side of the main body.